



Proprietary + Confidential

Play Value Model

Play BD StratOps - Aug 8, 2019

Mike Marchak@ | Iris Wang@ | Terry Jiang@ | Felix Hu@

EXHIBIT 360.R

EXHIBIT 360.R-001

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DO NOT SHARE

Google

EXHIBIT 360.R-002

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GOOG-PLAY-000337565.R

Contents

- Overview
- Model Summary
- Learnings & Takeaways
- Next Steps

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Overview

What is “Play Value” and what are we trying to accomplish with it?



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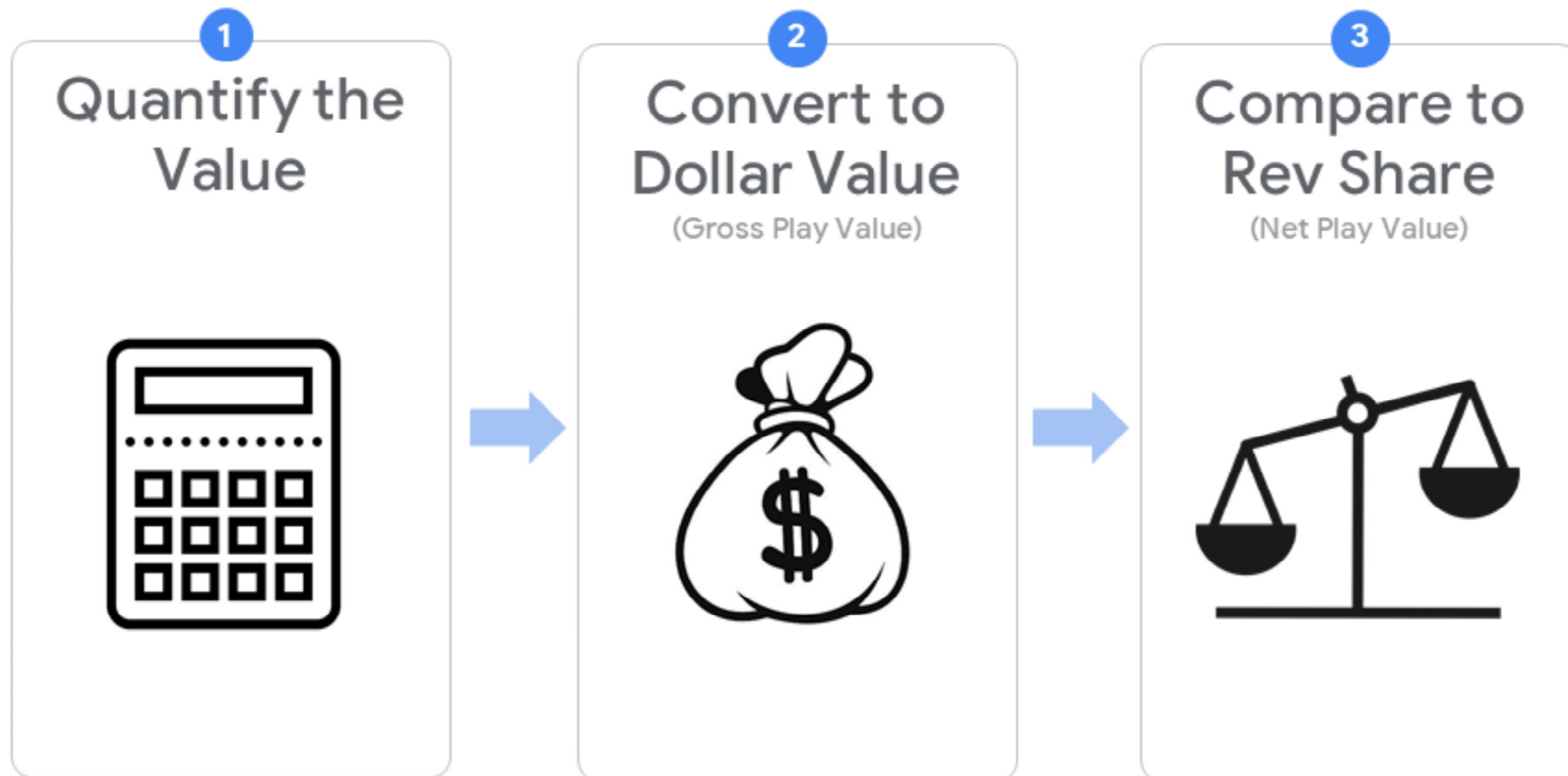
What is Play Value?

The **Quantifiable Value** provided to developers for the games/apps they have on Play

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What are we working on



oogle

EXHIBIT 360.R-006

How are we planning to use Play Value?

Developer Discussions

Play Value vs. Rev Share: Inform BD on status of Key Devs and early warning

Proactively educate: Devs on the breadth and depth of Play Value (where possible)

XFN Discussions

Inform: Direction on internal strategy (magical bridge, accelerators, Hug, etc) + Strategy planning

Google

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Model Summary

What variables make up the model and why?
What doesn't and why not?



- [Detailed Explanation](#)

EXHIBIT 360.R-008

Multiple sources of Play value

<dark blue> Included in the Play value model



Source: [Play value analysis](#), Samsung [workshop](#), Lion Force [proposal](#)

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- Play value to be discussed separately (led by Mike's [team analysis](#) and Ravi's teams [analysis](#)). Approximate calculations
- Discovery value estimated by calculating: Avg CPI * # of organic installs * discount factor for re-installs/search
- Estimated engagement value focused on liveops campaigns (0.7 * incremental spend from LiveOps events)
- Estimated payments value using blended avg dev cost to set up FOP 4.
- Buyer creation: 0.7 * incremental buyers created with Play 1P efforts * annual spend/buyer * discount factor for promotional buyers;
- Spend stretch: 0.7 * 5% spend lift across 80% of Play revenue covered by Play Points program in steady state 5.
- Delivery value: TB delivered * GCP delivery rates 6.

EXHIBIT 360.R-009

- Growth consulting: ~\$75M incremental Play revenue in 2018 across 1K consultations
- Notes:
- YT / Play integration (Supercell lootdrops after watching video)
- Play owned discovery: \$45B is so much bigger than if they turn up Ads in the store. Potential rationale:
 - Play is generating more value than what it is capturing (some long tail of devs wouldn't pay for the the value of what we are providing)
- Growth consulting: 1K consultations over the last 1.5 yrs, ~250M / year incremental consumer spend; Ads consulting also likely have same rough order of magnitude value
- A/B testing: alternatives is Plum (charge in scaled way based on users and # of experiments)

- Additional value not depicted:
- Custom store listings across Geo
- Custom Ads based on user journey
- Subscriptions

EXHIBIT 360.R-010

Discovery Value

Play's primary driver is as a source of installs

$$\text{Discovery Value} = (\text{Install Count}) * (\text{Install Value})$$

Google

EXHIBIT 360.R-011

Discovery Value: Install Value

Not all Install Values are created equal

$$\text{Discovery Value} = (\text{Install Count}) * (\text{Install Value})$$

Source	Play Owned Smerch, PRex, Related, Topchart		Categorical Search	
	New	Re-Installs	New	Re-Installs
Value	*	*	*	*
	\$ / Install	\$ / Install * Discount (50%)	\$ / Install * Discount (100%)	\$ / Install * Discount (50%)

Note: Deep Links & Navigational Search aren't included as these are developer driven

Google

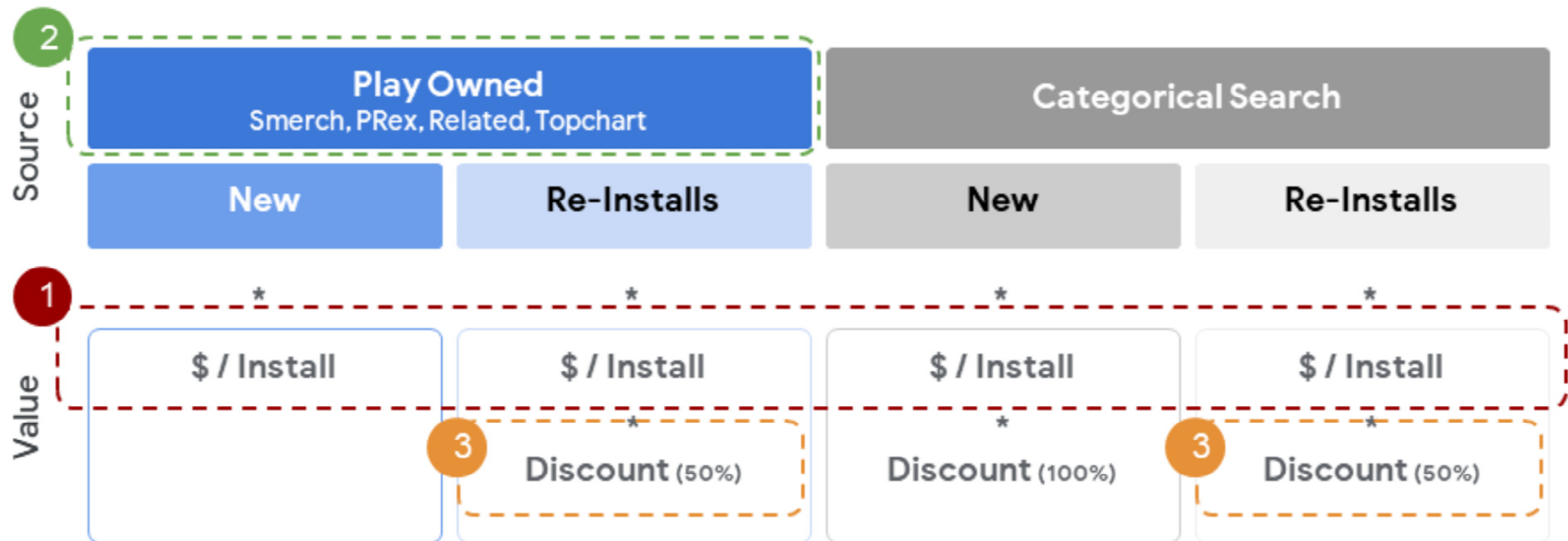
V1.5.2

EXHIBIT 360.R-012

Discovery Value: Install Value

Three buckets of assumptions around Discovery Value

- 1 Value per Install 2 Count of Play Driven Installs 3 Value of Re-installs



Note: Deep Links & Navigational Search aren't included as these are developer driven

Google

V1.5.2

EXHIBIT 360.R-013

Slide 12

1 Mike Marchak @google.com

I added assumptions to this deck. Focused most on #1 the Value per Install as that's where it seems there's the most discussion.
Felix Hu, 8/28/2019

1 Ricky Singla @google.com

These next few slides are great. I think we should make the words a little more exec readable and flush out the pros / cons.

I'd also like to identify a few that we find most promising & show what the impact might do for the top 20 devs.
Mike Marchak, 8/28/2019

EXHIBIT 360.R-014

Value per Install

Current Model uses CPI by Genre x Market

1 Value per Install

	Details	Pros	Cons	\$Δ Impact	
	CPI-Genre	Google UAC CPIs by Category x Market	<ul style="list-style-type: none">● Coverage of all apps● Coverage of all markets	<ul style="list-style-type: none">● Understates value for Core Games● Overstates value for Casual Games● Ignores channel quality differences	Current
	CPI-Actuals	Actual Google CPIs for each App x Market	<ul style="list-style-type: none">● Actual CPIs for available apps	<ul style="list-style-type: none">● No coverage of non-Google UA apps x markets● Ignores channel quality differences	Not yet estimated
Promising	CPI-Channel	Adjust CPI of Channels using aRev	<ul style="list-style-type: none">● Accounts for channel quality differences	<ul style="list-style-type: none">● No coverage of non-GPB apps● Unable to break out ads aRev. Uses Deep Links aRev instead	GPB: -\$10B
	LTV-Actuals	LTV using Play spend over user life	<ul style="list-style-type: none">● Most accurate for all GPB apps	<ul style="list-style-type: none">● No coverage of non-GPB apps● Ignores channel quality differences● Heavily reliant upon LTV time constraint or LTV discount value assumption	Expected to be net positive
Promising	LTV-aRev	LTV using 28 aRev	<ul style="list-style-type: none">● Accounts for channel quality differences● More accurate for GPB apps	<ul style="list-style-type: none">● No coverage of non-GPB apps● Heavily reliant upon LTV time constraint or LTV discount value assumption	\$XB Google

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[Alternate model] LTV based

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Key assumptions:

- Attribute **50% of LTV** from store driven and categorical search installers to Google Play
- LTV of an app is equal to annual spend divided by annual acquisitions (magically works out! [1])

Key insights:

- Total Play value using this approach similar to CPI based method
- LTV ratios : Search (3.7X) > Deep Links (2X) > RECS (X)

*More details available [here](#)

Biggest gainers and losers (LTV vs CPI based Play value)

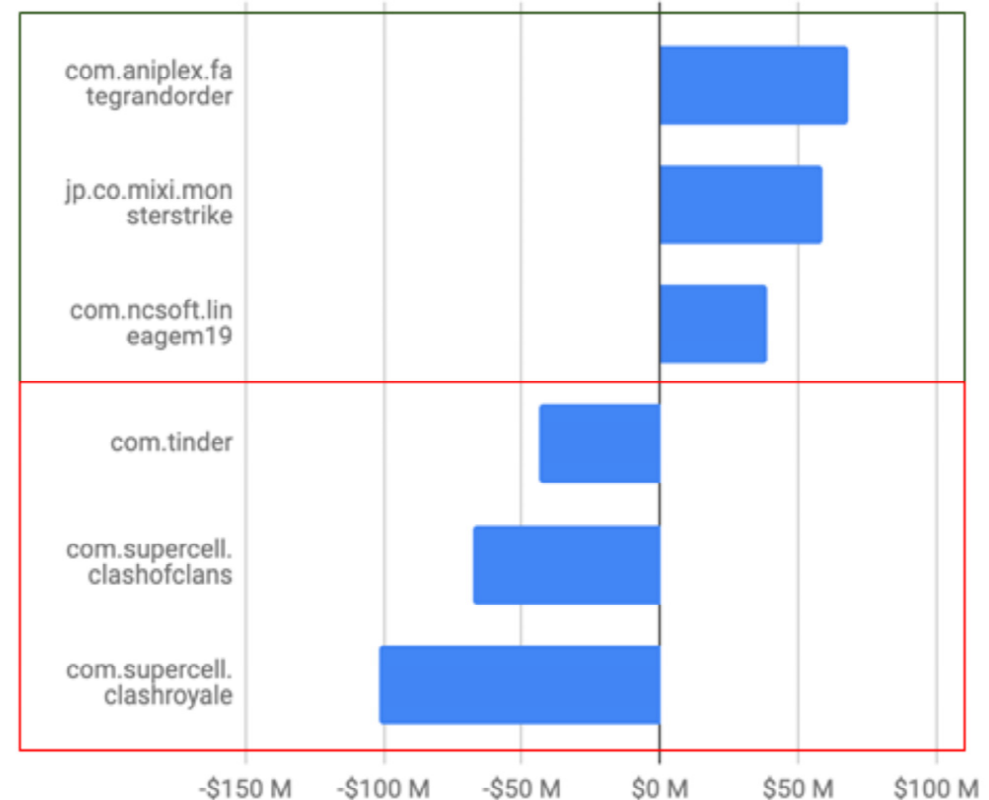


EXHIBIT 360.R-016

Comparison of different model outputs for top 20

Developer	Google Rev Share	Play Value (CPI model)	Play Value (LTV model)	Delta
NCSOFT Corporation	\$231 M	\$87 M	\$125 M	\$39 M
King	\$197 M	\$132 M	\$158 M	\$26 M
Aniplex Inc.	\$190 M	\$80 M	\$158 M	\$77 M
BANDAI NAMCO Entertainment Inc.	\$181 M	\$100 M	\$190 M	\$89 M
Supercell	\$165 M	\$293 M	\$120 M	-\$173 M
Netmarble	\$142 M	\$92 M	\$97 M	\$6 M
Playrix	\$134 M	\$65 M	\$94 M	\$29 M
mixi, Inc.	\$134 M	\$75 M	\$134 M	\$59 M
Playtika	\$108 M	\$45 M	\$65 M	\$19 M
Niantic, Inc.	\$102 M	\$84 M	\$102 M	\$18 M
Century Game (DIANDIAN INTERACTIVE)	\$87 M	\$34 M	\$39 M	\$5 M
Tinder	\$83 M	\$98 M	\$54 M	-\$44 M
IGG.COM	\$74 M	\$53 M	\$43 M	-\$11 M
SQUARE ENIX Co.,Ltd.	\$68 M	\$37 M	\$59 M	\$22 M
Gamania Digital Entertainment	\$67 M	\$29 M	\$31 M	\$2 M
Electronic Arts Inc	\$62 M	\$80 M	\$74 M	-\$6 M
Com2uS	\$56 M	\$29 M	\$54 M	\$26 M
PEARL ABYSS	\$56 M	\$33 M	\$41 M	\$8 M
Machine Zone, Inc				\$3 M
Nintendo Co., Ltd				\$11 M

"Modeled Developer Value" (MDV) is a theoretical vs. precise value, and doesn't include the complete set of resources or investments required to build and maintain the products, or the complete set of products and services provided to devs. They are based on assumptions on the perceived value of Google services to a developer that may not be accurate. They are also built to guide specific decisions and are not appropriate for guiding investments outside of those specific scenarios (e.g., Google level investments, decisions for another product area)

Google

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Play Driven Count

Current Model counts 100% of all PD surfaces, and assumes they are equal

2 Count of Play Driven Installs

	Details	Pros	Cons	\$Δ Impact
Preferred	PD-All	Aggregate all PD Surface installs and count equally	<ul style="list-style-type: none"> Simple to model, update and communicate Ignores differences between PD channels 	Current
	PD-Discout	Discount installs by (Cat/Search) ratio	<ul style="list-style-type: none"> Accounts for Dev's Brand power Assumes Dev Brand power should be applied to PD surfaces 	-\$10B
	PD-Channel	Differentiate PD surface installs and count separately	<ul style="list-style-type: none"> Potential for greater accuracy Introduces complexity, without clear sizable benefit 	Not yet estimated

PD = Play Driven: Featured, Top Charts, Related, PRex

Google

EXHIBIT 360.R-018

Re-installs

Current Model discounts Re-Installs by 50%

3 Value of Re-installs

	Details	Pros	Cons	\$Δ Impact
Preferred RI-50%	Discount all re-installs by 50%	<ul style="list-style-type: none"> Simple to model, update and communicate 	<ul style="list-style-type: none"> Unclear if 50% is right discount 	Current
RI-0%	Do not include re-installs in Play Value model	<ul style="list-style-type: none"> May match Dev perception 	<ul style="list-style-type: none"> Understates value for all devs 	-\$9B
RI-100%	Count re-installs & new-installs equally	<ul style="list-style-type: none"> Improved accuracy for apps where re-installs more valuable than new-installs 	<ul style="list-style-type: none"> Will overstate value for most apps Unclear it improves overall accuracy 	+\$9B
RI-100%+	Multiply all re-installs by X factor	<ul style="list-style-type: none"> Improved accuracy for apps where re-installs more valuable than new-installs 	<ul style="list-style-type: none"> Will overstate value for most apps Unclear it improves overall accuracy 	+\$XB

RI = Re-installs, both PD and Search

Google

EXHIBIT 360.R-019

Sensitivity: Discovery has most assumptions and greatest potential for change

	Current Total Discovery Value	\$45.5B	
			Impact of Change
CPIs	<i>Include full CPI value (current)</i>	<i>\$45B</i>	
	Discount Search CPI by (Search/DL) aRev Ratio		-\$4B
	Discount Play Owned CPIs by (Play Owned/DL) aRev Ratio		-\$14B
Categorical Search	<i>Include 100% Categorical Search (current)</i>	<i>\$21B</i>	-
	Include 50% Categorical Search		-\$10B
	Exclude Categorical Search		-\$21B
Navigational Search	<i>Exclude Navigational Search (current)</i>	<i>\$0B</i>	
	Include 100% Navigational Search		\$18B
	Include 50% Navigational Search		\$9B
Play Owned Install Count	<i>Include 100% of Play Owned Installs (current)</i>	<i>\$24B</i>	
	Discount Play Own Installs by (Categorical/Search) Ratio		-\$10B
Re-Installs	<i>Include 50% Re-Installs (current)</i>	<i>\$9.5B</i>	
	Include 100% Re-Installs		\$9B
	Exclude Re-Installs		-\$9B

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EXHIBIT 360.R-020

Slide 18

- 1 yes we need to change this. Is this deck being used for tomorrow's meeting? i will update this but i want to update the other deck first.
 Iris Wang, 8/23/2019
- 2 **Felix Hu** @google.com **Iris Wang**@google.com

 Does this number & the \$45B number need to change w/ the categorical search bug fixed you rolled out in 1.5.3?
 Mike Marchak, 8/23/2019
- 2 sorry correction - i will not update the exec deck, but i want to get back to your email related to that deck +marchak@google.com
 Iris Wang, 8/23/2019

EXHIBIT 360.R-021

Sensitivity: Discovery has most assumptions and greatest potential for change

	Current Total Discovery Value	\$45.5B	
			Impact of Change
Categorical Search	<i>Include 100% New Installs (current)</i>	\$16B	
	Include 50% New Installs		-\$8B
	<i>Include 50% Re-installs (current)</i>	\$6B	
	Include 100% Re-installs		\$6B
	Exclude Re-Installs		-\$6B
	Exclude All Categorical Search		-\$22B
	Discount Search CPI by (Search/DL) aRev Ratio		-\$4B
Navigational Search	<i>Exclude Navigational Search (current)</i>	\$0B	
	Include 100% Navigational Search		\$18B
	Include 50% Navigational Search		\$9B
Play Owned Install Count	<i>Include 100% of New Installs (current)</i>	\$19B	
	Discount New Installs # by (Categorical/Search) Ratio		-\$8B
	<i>Include 50% of Re-Installs (current)</i>	\$4B	
	Include 100% of Re-Installs		\$4B
	Discount Re-Installs # by (Categorical/Search) Ratio		-\$2B
	Exclude Re-Installs		-\$4B
	Discount Play Owned CPIs by (Play Owned/DL) aRev Ratio		-\$15B

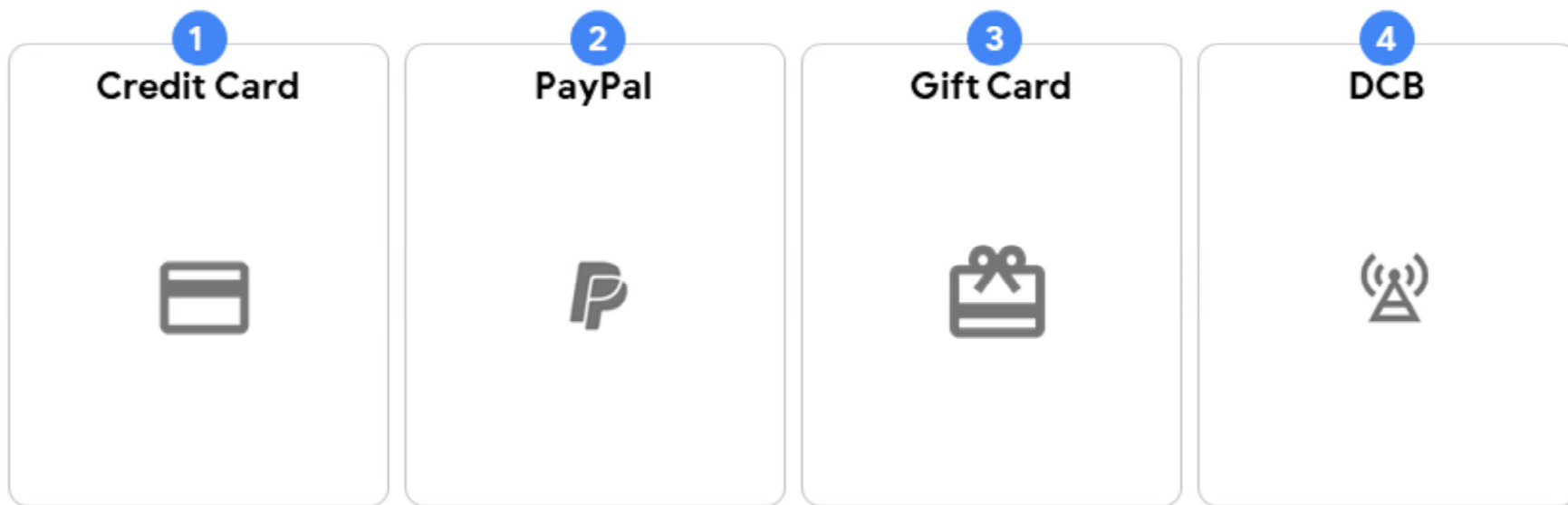
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EXHIBIT 360.R-022

FOP Value

Play enables users, across the world to pay via their preferred FOP

$$FOP\ Value = (Spend\ by\ FOP) * (Value\ per\ Spend)$$



Google

EXHIBIT 360.R-023

FOP Value: Using Cost Plus in Play Value Model

FOPs will be difficult for a dev to replicate at Play's cost

$$FOP\ Value = (Spend\ by\ FOP) * (Value\ per\ Spend)$$

Cost

Credit Card

3%

PayPal

3%

Gift Card

9.5%

DCB

13.5%

Blended Avg

6%

Cost Plus

Credit Card

6%

Assumed 2x
conversion from
Play's Buyer Pool

PayPal

3%

No uplift

Gift Card

13.5%

Based on users who
only spent on GC

DCB

20%

Based on developer
costs to replicate

Blended Avg

10%

Varies Widely by Developer

15%
mixi

6%
pandora®

Google

V1.5

EXHIBIT 360.R-024

Delivery Value

Cloud pricing used in the model likely undervalues delivery value

$$\text{Delivery Value} = (\text{Volume Delivered}) * (\text{Cloud Pricing})$$

Destination	Price (per GB) by monthly usage			
	First 10 TB	Next 140 TB	Next 850 TB	> 1000 TB
Asia Pacific (Including Hong Kong)	\$0.09	\$0.06	\$0.05	\$0.04
China ¹	\$0.20	\$0.17	\$0.16	\$0.145
Europe	\$0.08	\$0.055	\$0.03	\$0.02
North America (Including Hawaii)	\$0.08	\$0.055	\$0.03	\$0.02
Oceania ²	\$0.11	\$0.09	\$0.08	\$0.065
South America	\$0.09	\$0.06	\$0.05	\$0.04
All other destinations	\$0.09	\$0.06	\$0.05	\$0.04

<https://cloud.google.com/cdn/pricing>

Google

EXHIBIT 360.R-025

Play Value: Current Model

Comprised of 3 drivers, which likely accounts for majority of quantifiable value

$$\begin{array}{ccccc}
 & & \text{Play Value} & & \\
 & & = & & \\
 \text{Discovery Value} & + & \text{FOP Value} & + & \text{Delivery Value} \\
 \\
 = & & = & & = \\
 \\
 \text{(Install Count)} & & \text{(Spend by FOP)} & & \text{(Volume Delivered)} \\
 * & & * & & * \\
 \text{(Install Value)} & & \text{(Value per Spend)} & & \text{(Cloud Pricing)}
 \end{array}$$

Google

EXHIBIT 360.R-026

Reminder: Value model does not account for all the ways Play creates value

<dark blue> Included in the Play value model



Source: [Play value analysis](#), Samsung [workshop](#), Lion Force [proposal](#)

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- Play value to be discussed separately (led by Mike's [team analysis](#) and Ravi's teams [analysis](#)). Approximate calculations
- Discovery value estimated by calculating: Avg CPI * # of organic installs * discount factor for re-installs/search
- Estimated engagement value focused on liveops campaigns (0.7 * incremental spend from LiveOps events)
- Estimated payments value using blended avg dev cost to set up FOP 4.
- Buyer creation: 0.7 * incremental buyers created with Play 1P efforts * annual spend/buyer * discount factor for promotional buyers;
- Spend stretch: 0.7 * 5% spend lift across 80% of Play revenue covered by Play Points program in steady state 5.
- Delivery value: TB delivered * GCP delivery rates 6.

EXHIBIT 360.R-027

- Growth consulting: ~\$75M incremental Play revenue in 2018 across 1K consultations
- Notes:
- YT / Play integration (Supercell lootdrops after watching video)
- Play owned discovery: \$45B is so much bigger than if they turn up Ads in the store. Potential rationale:
 - Play is generating more value than what it is capturing (some long tail of devs wouldn't pay for the the value of what we are providing)
- Growth consulting: 1K consultations over the last 1.5 yrs, ~250M / year incremental consumer spend; Ads consulting also likely have same rough order of magnitude value
- A/B testing: alternatives is Plum (charge in scaled way based on users and # of experiments)

- Additional value not depicted:
- Custom store listings across Geo
- Custom Ads based on user journey
- Subscriptions

EXHIBIT 360.R-028

Learnings and Takeaways

What have we learned?

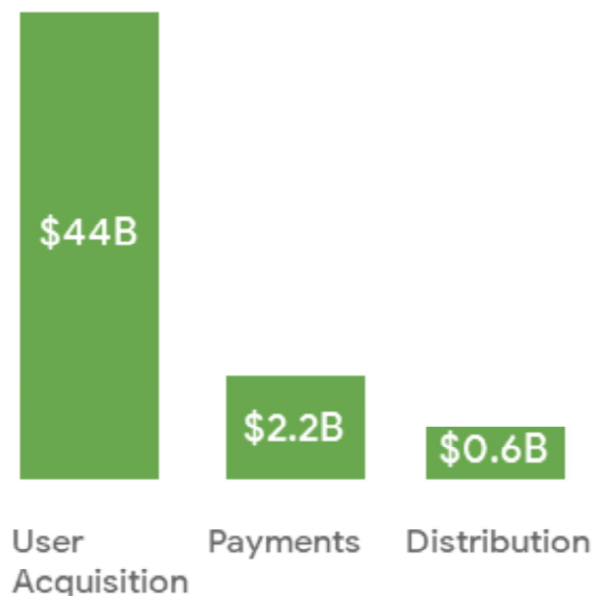


- v1.5

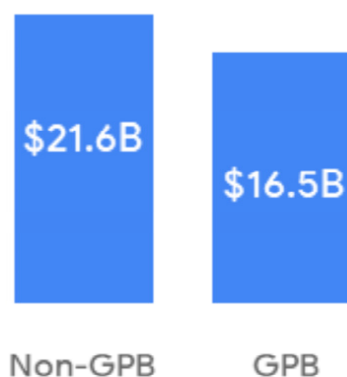
EXHIBIT 360.R-029

DRAFT Total value based on the model vs our current billing model

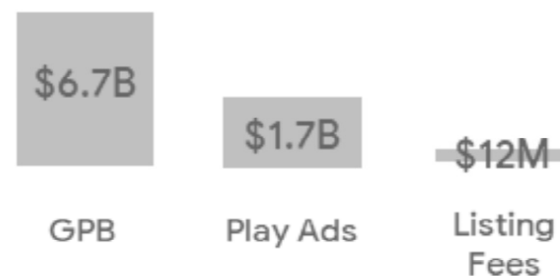
By type of value



By type of dev*



How we charge



Modeled Developer Value (MDV) is a theoretical construct and not a precise value. MDVs are not complete in that they do not include the complete set of resources or investments required to build and maintain the products, nor do they include the complete set of products and services provided to developers. They are based on assumptions on the perceived value of Google services to a developer that may not be accurate. They are also built to guide specific decisions and are not appropriate for guiding investments outside of those specific scenarios (e.g., Google level investments, decisions for another product area)

*There are some devs with both non-GPB & GPB apps. These are excluded from this for simplicity

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EXHIBIT 360.R-030

Slide 26

- 1 I will let Iris Wang@google.com and @fxhu@google.com comment on this as I am not too close to how this was done and dont want to make a wrong guess.
Small note: Ads is the primary business model for Voodoo (~\$4M/month on Admob) but they do make ~\$150k per month on GPB. So, not tiny on GPB.
Ricky Singla, 8/19/2020
- 3 Felix Hu@google.com Iris Wang@google.com Ricky Singla@google.com

I need to clarify how we did this calc.
I know we removed some partners that had apps in both GPB & non-GPB buckets. I'm particularly interested in some of the big partners that can single handily skew this value that we've identified as using tiny bits of GPB, but shouldn't be characterized as GPB devs....ie, FB, Snap, Voodoo (even tougher Netflix, Tinder)
Mike Marchak, 8/19/2020
- 3 For this deck, the GPB vs Non-GPB definition should be - on the developer level, if 2018's full year consumer spend is less than \$100, then Non-GPB. if \$100+, the dev is on GPB.
Iris Wang, 8/19/2020

EXHIBIT 360.R-031

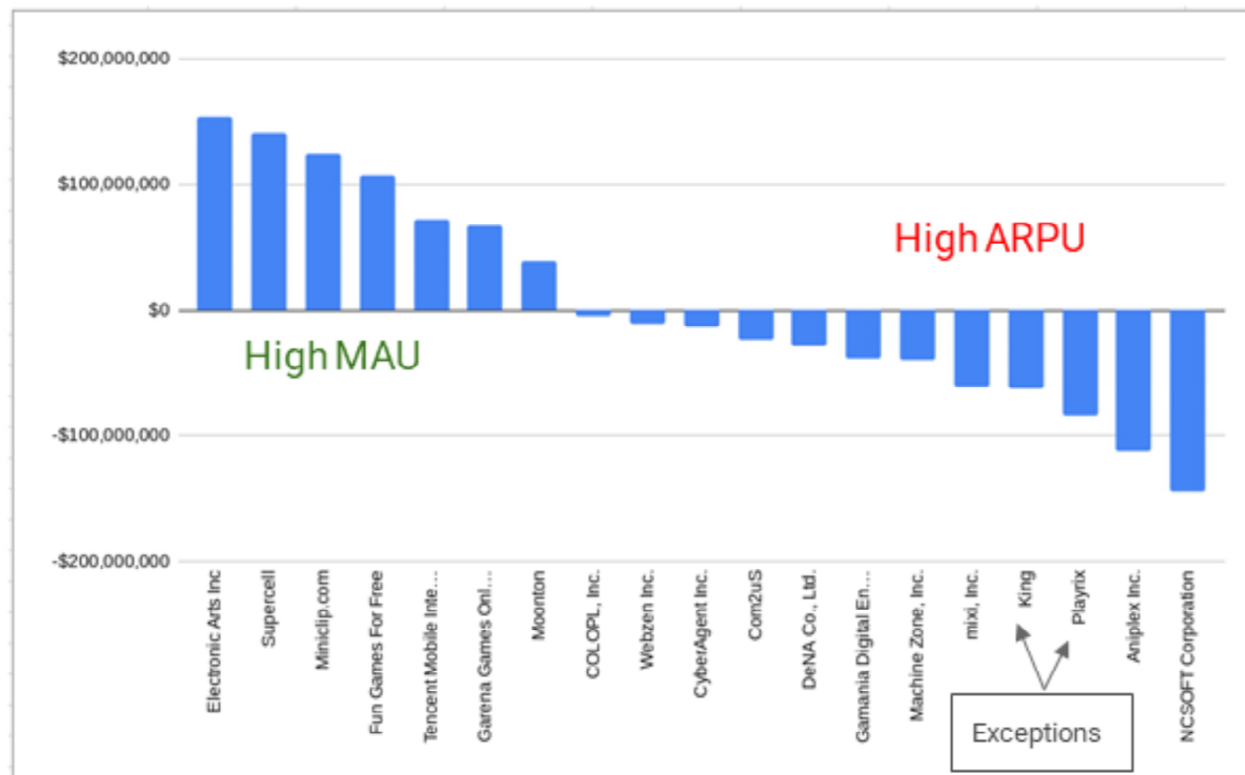
Using Play Value to inform Magical Bridge:

- Overview
- Model Summary
- Learnings & Takeaways
- Next Steps

Google

EXHIBIT 360.R-032

Play Value for select gaming developers: varies based on game player and monetization makeup



Top 100 Most Negative

- Cover 58% of Play \$\$
- Avg 19% value

Top 100 Most Positive

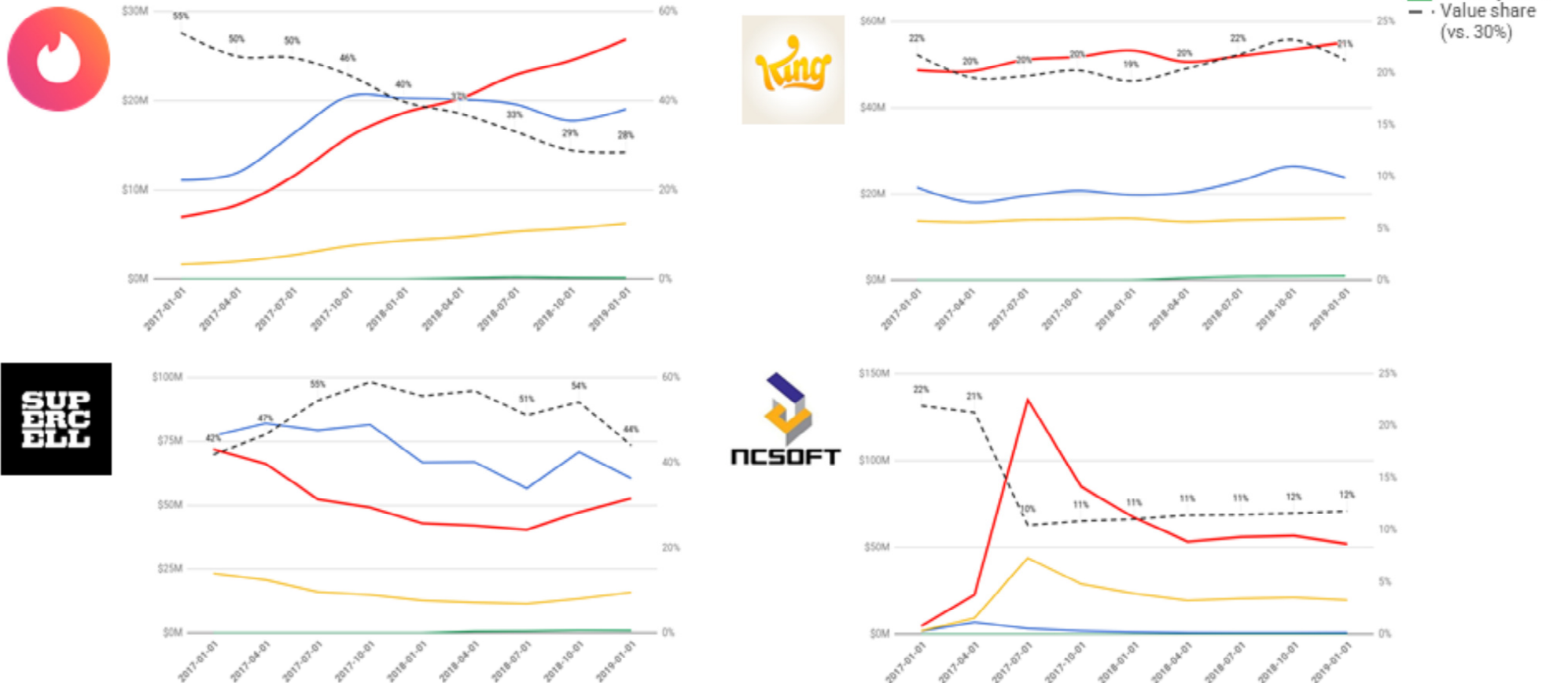
- Cover 12% of Play \$\$
- Avg 208% value

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EXHIBIT 360.R-033

Play Value varies by developer and can vary over time



Note: Excludes value provided via Play analytics, tools, etc, which are deemed valuable by developers

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Netflix Over Time

- (According to [this news](#)) "As of May 2018, Google Play billing for Netflix is no longer available to new or rejoining customers".
- From Q3 2018, consumer spend indeed started decreasing over time (Q1 2019: -24% yoy).
- However, Play value hasn't changed much (Q1 2019 flat compared to Q1 2018), leading value % to increase significantly (Q1 2019: +70% yoy in terms of value %)

Play Value Over Time - Netflix

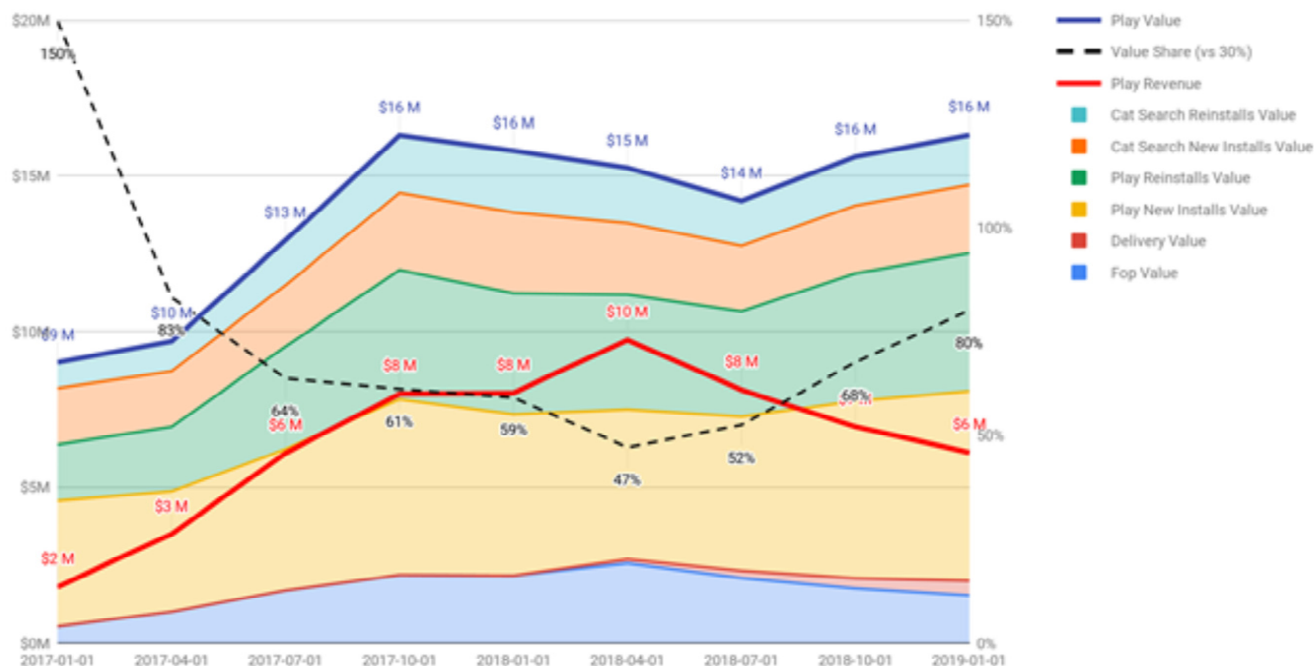


EXHIBIT 360.R-035

Appendix

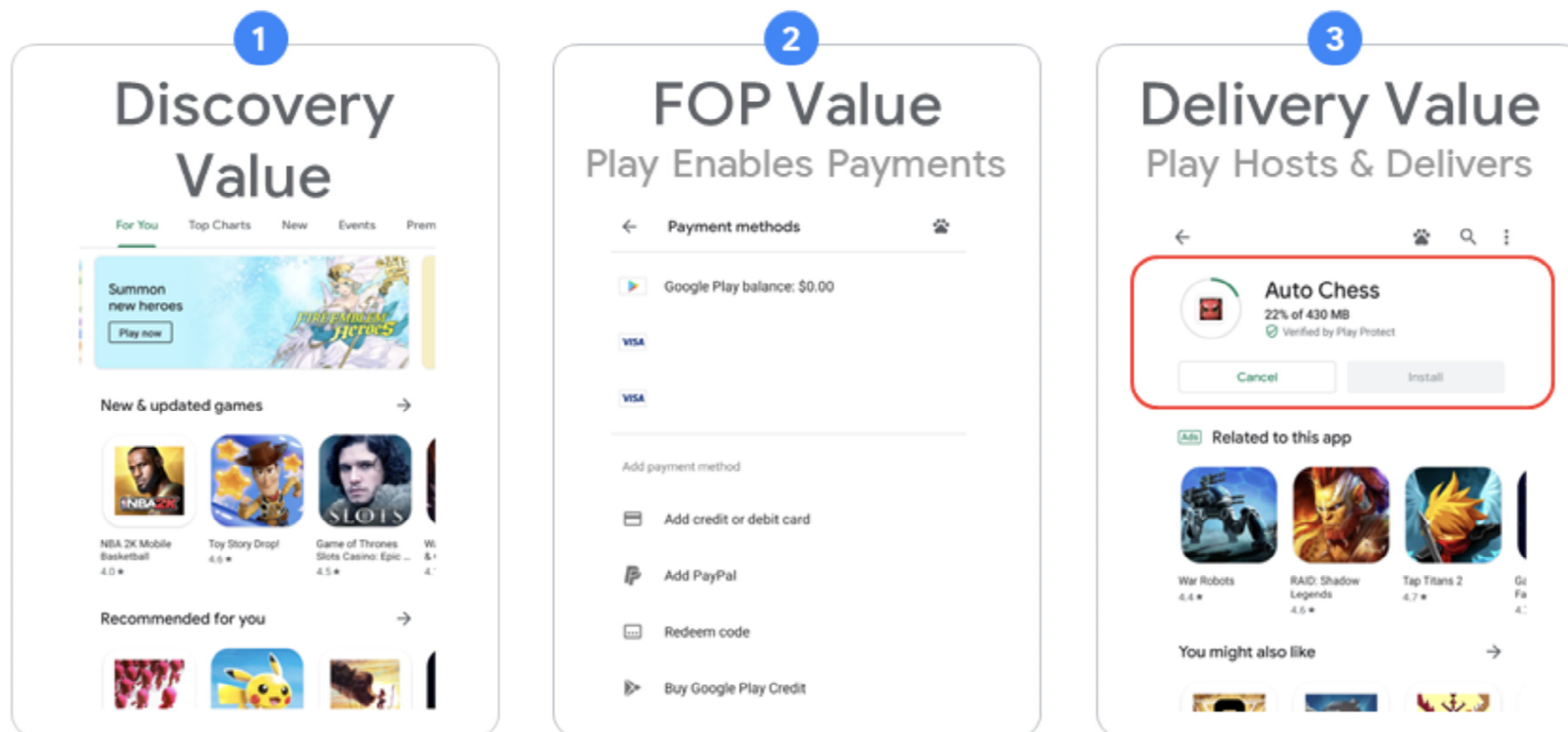
What have we learned?



- v1.5

EXHIBIT 360.R-036

What drives the current Model?



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EXHIBIT 360.R-037

What we are not taking into consideration....

Hypothesis: These don't create value at the same scale but are be meaningful to some devs

Business / Tech Services

- Console Analytics
- A/B Testing
- Instant Games
- Vitals
- Android Studio

Many of these improve discovery, which is captured in the model

Comm Ops (beyond Installs)

- Play Points
- Gift Card Promotions
- CRM / Credits
- LiveOps / Engagement Campaigns

Many of these increase \$, which is captured in the model

BD + Hug

- Growth Consulting
- Tech Consulting
- Ads Credits
- Cloud Credits
- Marketing \$

Many of these improve discovery or \$, which is captured in the model

Google

EXHIBIT 360.R-038

Summary

NOTE:

Data in this section based on previous version of the model. Expect some shifts in value. However, the overall trends hold true.

Google

EXHIBIT 360.R-039

Summary

- Play High Level: Discovery is King
- Persona's: Discovery still King, but...
- Game Developer: Some get a lot, some get very little

Google

EXHIBIT 360.R-040

2

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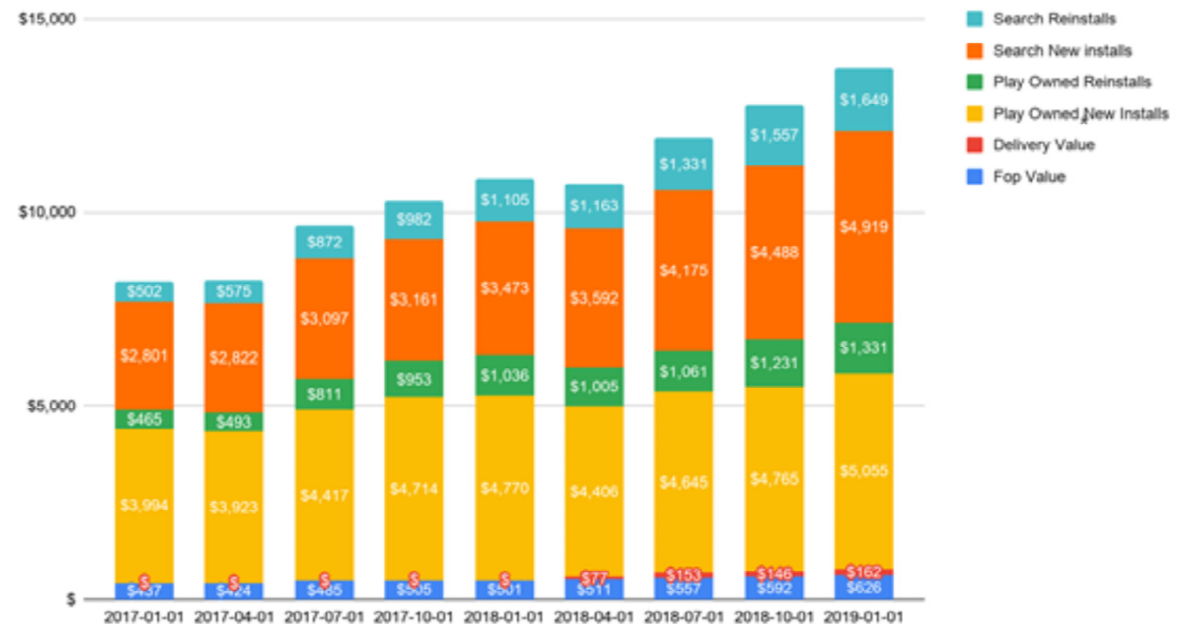
Play High Level

Discovery is King, but the Play Controlled New Installs contribution is slowing

Total Breakdown		
FOP Value	\$1,149 M	4.7%
Discovery Value	\$23,253 M	94.1%
Delivery Value	\$299 M	1.2%
Discovery Breakdown		
Play Owned New Installs	\$9,410 M	38.1%
Search New Installs	\$2,292 M	9.3%
Play Owned Reinstalls	\$8,662 M	35.1%
Search Reinstalls	\$2,888 M	11.7%
FOP Breakdown		
Credit Card	\$408 M	1.6%
Paypal	\$25 M	0.1%
Play Card	\$216 M	0.9%
DCB	\$500 M	2.0%

*Based on 2018 H2 data

Play Value Components Evolution (\$M)



*For now, we only have delivery value data from Q2, 2018

Google

- Left side: high level breakdown (6 months for storage if storage only has 6 months data)

EXHIBIT 360.R-041

2

Persona Level (sampling of representative apps)

Big Gaming more distributed vs Indie & Ads Gaming

	FOP				Discovery				Delivery
Overall	4.8%				93.0%				2.2%
	Credit Card	PayPal	Play Card	DCB	Play Controlled New Installs	Search New Installs	Play Controlled Reinstalls	Search Reinstalls	Delivery Cost
1 BIG GAMING	7.8%	0.9%	7.1%	13.1%	24.8%	12.8%	18.8%	10.7%	4.0%
2 ADS GAMING	0.2%	0.0%	0.0%	0.1%	72.1%	11.0%	12.5%	2.1%	1.9%
3 INDIE GAMING	2.6%	0.6%	2.9%	2.0%	39.7%	17.5%	18.9%	14.4%	1.4%
4 ADS APPS	0.0%	0.0%	0.0%	0.3%	27.9%	25.7%	26.6%	17.4%	2.2%
5 SUBS APPS	3.9%	0.7%	0.4%	2.5%	17.7%	33.1%	10.3%	30.0%	1.5%
6 E-COMMERCE	0.0%	0.0%	0.0%	0.0%	25.7%	39.3%	13.4%	20.8%	0.7%
7 BRAND EXTENDERS	0.0%	0.0%	0.0%	0.0%	9.8%	42.9%	8.7%	38.0%	0.5%
8 MESSAGING	0.1%	0.0%	0.1%	0.9%	38.4%	11.5%	34.3%	12.1%	2.7%
9 SOCIAL GOOD APPS	0.0%	0.0%	0.0%	0.0%	29.3%	45.0%	10.8%	14.5%	0.4%

* Based on a sample of 295 packages in 2018H2

Google

Confidential + Proprietary

- Might plug in secondary acquisition whenever that is ready (as a separate deck, appendix; 28d aRev vs CPI)

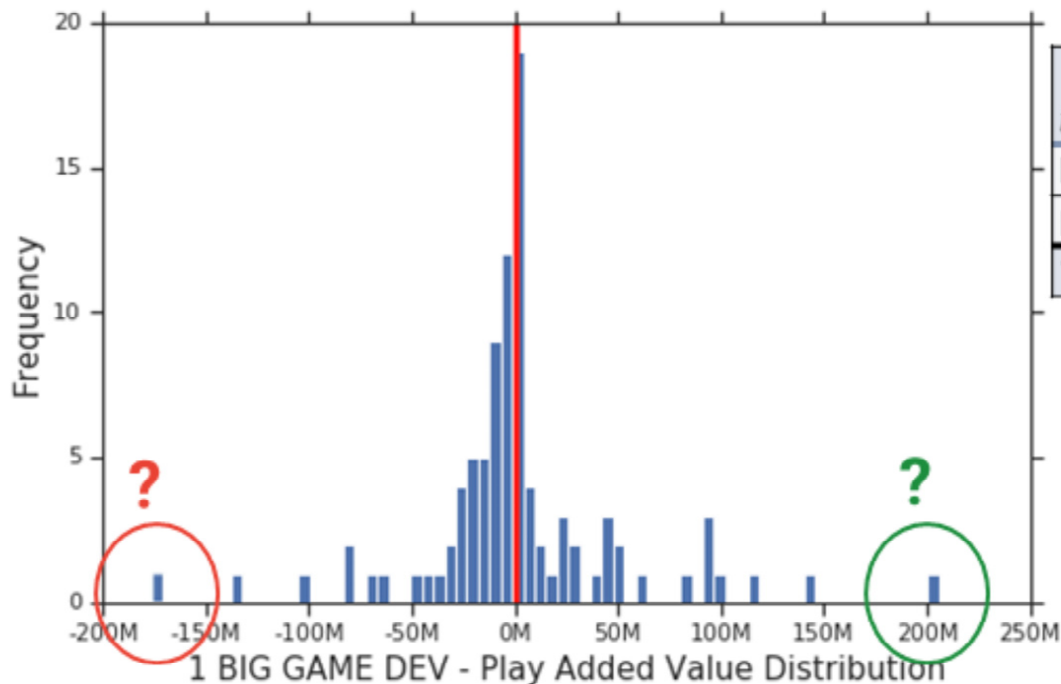
EXHIBIT 360.R-042

3

Large Game Developers (sampling of representative devs)

Majority (57%) have negative Net Play Value, with a few outliers

Note: We are always providing value to the developer. A negative net play value only indicates that we are providing <30% of Consumer Spend via this model. It does not include other aspects of Value



Google * 2018 data

type	Net Play Value	#Devs	Median Value	Avg Value
Negative	-\$1335M	53	-\$11.2M	-\$25.2M
Positive	\$1464M	40	\$19.4M	\$36.6M
Total	\$129M	93	-\$3.7M	\$1.4M

Includes...



Confidential + Proprietary

- Keep old

EXHIBIT 360.R-043

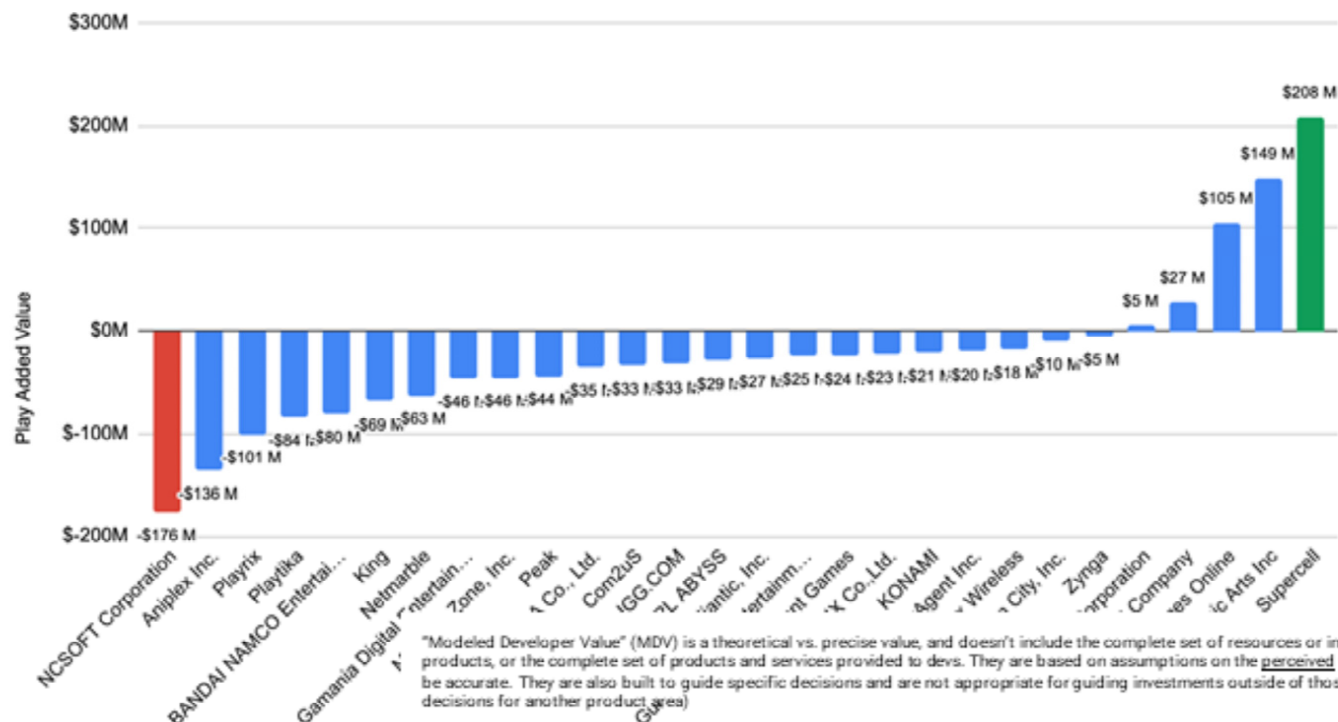
3

Large Game Developers (selected)

Supercell and NCSoft at opposite ends of the Net Play Value spectrum

Note: We are always providing value to the developer. A negative net play value only indicates that we are providing <30% of Consumer Spend via this model. It does not include other aspects of Value

Play Added Value in 2018 (\$M)



Google

Confidential + Proprietary

- Keep old

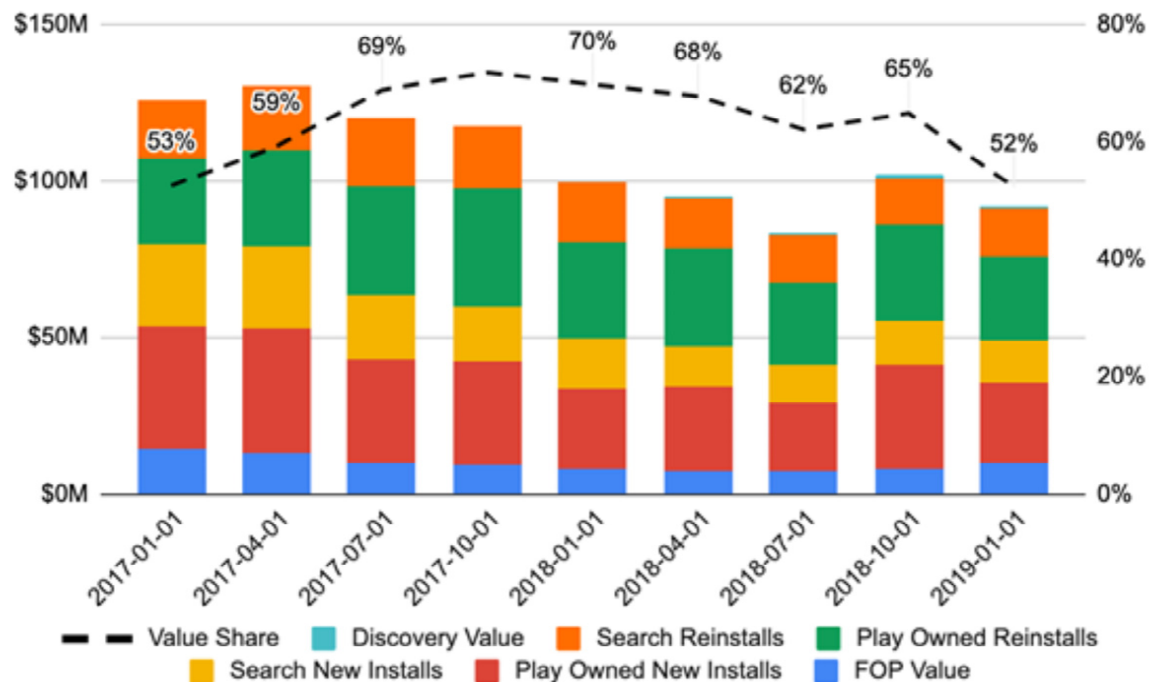
EXHIBIT 360.R-044

3

Supercell Deeper Dive

Play Value driven by Discovery, particularly by Play Controlled sources

Total Breakdown		
FOP Value	\$30.4M	8.0%
Discovery Value	\$347.7M	91.3%
Delivery Value	\$2.5M	0.7%
Discovery Breakdown		
Play Controlled New Installs	\$107.3M	28.2%
Search New Installs	\$55.8M	14.7%
Play Controlled Reinstalls	\$119.2M	31.3%
Search Reinstalls	\$65.4M	17.2%
FOP Breakdown		
Credit Card	\$10.6M	2.8%
Paypal	\$1.8M	0.5%
Play Card	\$6.5M	1.7%
DCB	\$11.5M	3.0%



*Value share > 30% means play delivers more value than it receives

Confidential + Proprietary

Google

*2018 data

- CPI 1.1\$
- Consumer Spend \$574M
- Play Revenue \$172M
- Play Value \$380M
- value share =(Play Value/Consumer Spend)

EXHIBIT 360.R-045

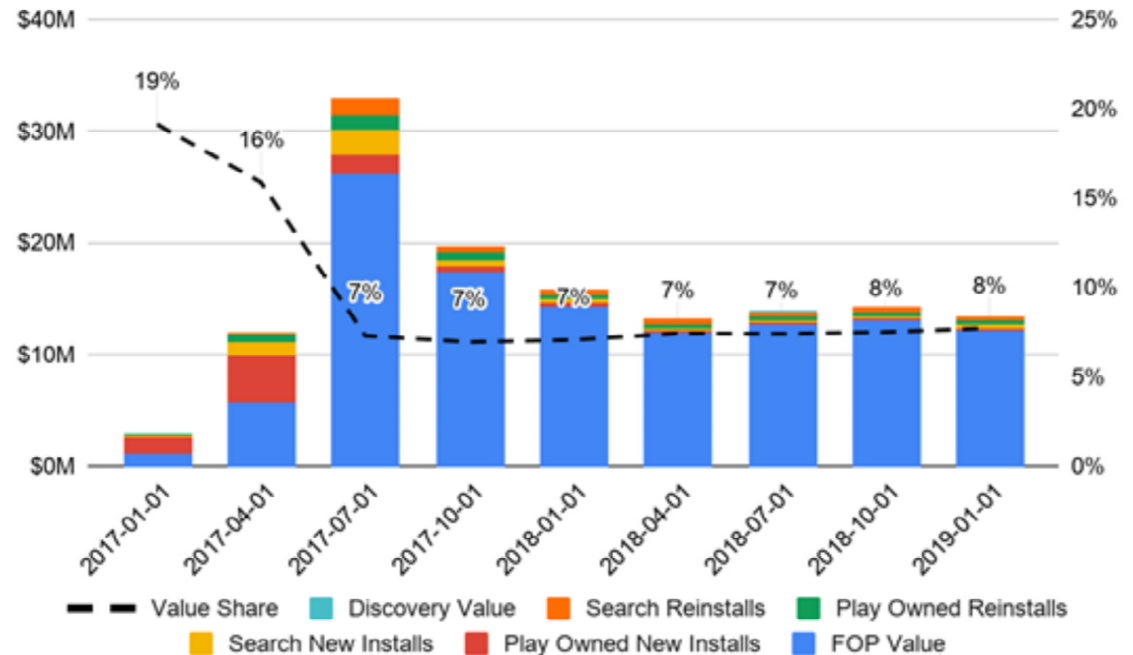
3

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NCSoft Deeper Dive

Discovery drives a small amount of Play Value, even when LineageM was new

Play Value Breakdown		
FOP Value	\$52.0M	90.9%
Discovery Value	\$5.1M	9.0%
Delivery Value	\$0.0M	0.1%
Discovery Breakdown		
Play Controlled New Installs	\$0.8M	1.4%
Search New Installs	\$1.0M	1.8%
Play Controlled Reinstalls	\$1.3M	2.4%
Search Reinstalls	\$2.0M	3.4%
FOP Breakdown		
Credit Card	\$13.5M	23.7%
Paypal	\$0.0M	0.0%
Play Card	\$10.4M	18.3%
DCB	\$28.0M	48.9%



*Value share > 30% means play delivers more value than it receives

Confidential + Proprietary

Google

*2018 data

- CPI 3.4\$
- Consumer Spend \$777M
- Play Revenue \$233M
- Play Value \$57M
- value share =(Play Value/Consumer Spend)

EXHIBIT 360.R-046

3

Supercell vs NCSoft

Despite comparable Consumer Spend, Supercell's Discovery Value dwarfs NCSofts

		Supercell	NCSoft	Supercell/NC Soft
	Consumer Spend	\$575M	\$777M	.7x
	Play Revenue	\$172M	\$233M	.7x
	Play Value	\$381M	\$57M	7x
Discovery	Play Controlled New Installs	\$107M	\$1M	132x
	Search New Installs	\$56M	\$1M	55x
	Play Controlled Reinstalls	\$119M	\$1M	88x
	Search Reinstalls	\$65M	\$2M	34x
	Discovery total	\$348M	\$5M	68x
FOP	Credit Card	\$11M	\$14M	.8x
	Paypal	\$2M	\$M	274x
	Play Card	\$7M	\$10M	.6x
	DCB	\$11M	\$28M	.4x
	Fop total	\$30M	\$52M	.6x
Delivery	Delivery total	\$M	\$1M	-

Google

* 2018 data

*NCSOFT's CPI is \$3.4 while Supercell's is \$1.1

Confidential + Proprietary

- Cpi?

EXHIBIT 360.R-047

Proprietary + Confidential

Next Steps



EXHIBIT 360.R-048

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

GOOG-PLAY-000337611.R

What's next

1

Iterate the Model

Iterate on Installs
Quantifications

Iterate on Install
Value, both CPI &
aRev

Consider bringing
in additional
drivers

2

Increase flexibility & Visualize

Persona Iteration to
improve groups

Allow for multi \$
value conversions

Sensitivity Testing

3

Comms

Sanity check with
stakeholders

Build first internal
dev report card

Build first external
dev Play Value deck

Google

EXHIBIT 360.R-049

Proprietary + Confidential

Questions



EXHIBIT 360.R-050

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

GOOG-PLAY-000337613.R

Proprietary + Confidential

Appendix



EXHIBIT 360.R-051

HIGHLY CONFIDENTIAL - ATTORNEYS' EYES ONLY

GOOG-PLAY-000337614.R

Discovery Value: CPI vs LTV approach

CPI approach typically undervalues....

	CPI Approach (Current)	LTV Approach	\$Δ Impact
Platform Wide			
Non-GPB Devs		\$0	
GPB Devs			
Package level for top X representative packages			
Games: High ARPU			
Games: High MAU			
Apps: Subs			
Apps: IAP			

Google

EXHIBIT 360.R-052

Discovery Value: Install Value

Two different approaches evaluated. Decision to Utilize #1

$$\text{Discovery Value} = (\text{Install Count}) * (\text{Install Value})$$

1

CPI

What it would cost to buy
the installs

Game level
Using UAC CPIs
By Genre
By Market

Pros

- Inline with Market
- Straightforward for developers

Cons

- Undervalues games like LineageM
- Does not account for burst installs

2

28 day aRev

Actual spend, for time
limited duration

Game level
Using actuals
or
Genre aRev if no revenue

- Captures actual rev of Play install
- Better captures games like LineageM

- Systematically lower than CPI
- Devs may not accept 28d time threshold

Google

EXHIBIT 360.R-053

What we are not taking into consideration....

Hypothesis: These don't create value at the same scale but are be meaningful to some devs

Business / Tech Services

- Console Analytics
- A/B Testing
- Instant Games
- Vitals
- Android Studio

Many of these improve discovery, which is captured in the model

Comm Ops (beyond Installs)

- Play Points
- Gift Card Promotions
- CRM / Credits
- LiveOps / Engagement Campaigns

Many of these increase \$, which is captured in the model

BD + Hug

- Growth Consulting
- Tech Consulting
- Ads Credits
- Cloud Credits
- Marketing \$

Many of these improve discovery or \$, which is captured in the model

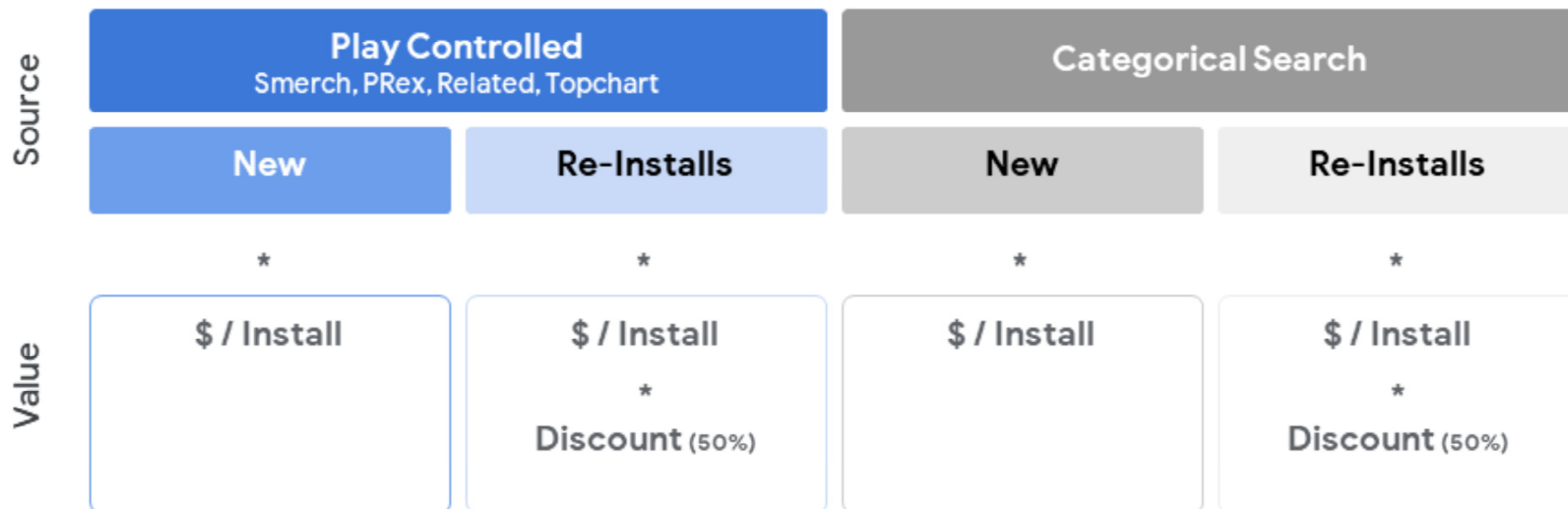
Google

EXHIBIT 360.R-054

Discovery Value: Install Value Discount

Not all Install Values are created equal

$$\text{Discovery Value} = (\text{Install Count}) * (\text{Install Value})$$



V1.5.X (Updated for Search to only include Categorical Search)

Google

EXHIBIT 360.R-055

FOP Value: Developer Replication Cost

However, some FOPs may be difficult for a dev to replicate at Play's cost

$$FOP\ Value = (Spend\ by\ FOP) * (Value\ per\ Spend)$$

Developer Cost to Replicate	1	2	3	4
	Credit Card	PayPal	Gift Card	DCB
	6%	3%	13.5%	20%

V1.5.X (Updated for FOP for Developer cost to replicate)

Google

EXHIBIT 360.R-056

What are we not taking into consideration....

Other Drivers	Quantifiable Value	Challenge
BD Support / Services		
Business Consultations	Growth Consulting Impact	Accuracy, Small in relation to other value
Technical Consultations	?	What value to use
GPP Value	1%	ROI of incorporating
Gift Card Promotion Value	?	What value to use / Should we use
Marketing Spend	Actuals	Should we use
Ad Credits	Actuals	Should we use
Cloud Credits	Actuals	Should we use

Google

EXHIBIT 360.R-057

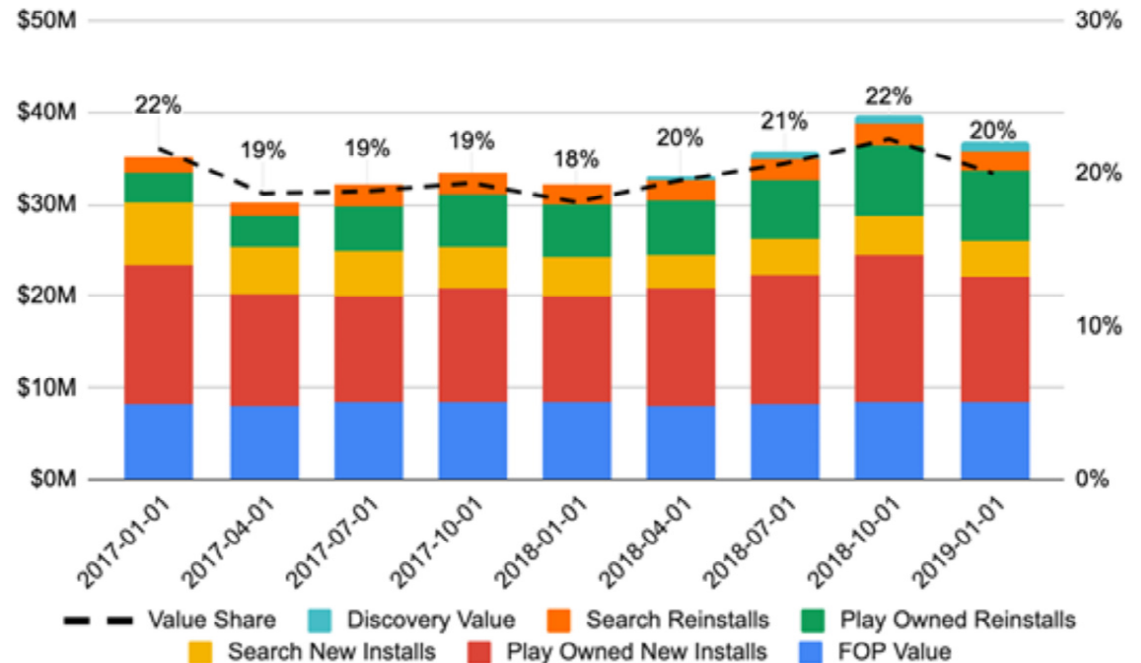
3

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King Deeper Dive

Lots of installs, but low CPI leads to a negative Net Play Value

Total Breakdown		
FOP Value	\$33.3M	23.6%
Discovery Value	\$105.3M	74.8%
Delivery Value	\$2.2M	1.6%
Discovery Breakdown		
Play Controlled New Installs	\$54.1M	38.4%
Search New Installs	\$16.2M	11.5%
Play Controlled Reinstalls	\$25.9M	18.4%
Search Reinstalls	\$9.0M	6.4%
FOP Breakdown		
Credit Card	\$14.1M	10.0%
Paypal	\$2.7M	1.9%
Play Card	\$2.0M	1.4%
DCB	\$14.4M	10.3%



*Value share > 30% means play delivers more value than it receives

Confidential + Proprietary

Google

*2018 data

- CPI 0.4\$
- Consumer Spend \$698M
- Play Revenue \$209M
- Play Value \$140M

EXHIBIT 360.R-058

3

Supercell vs King

Differences in CPI due to Genre, Strategy vs Casual, drive the difference

		Supercell	King	Supercell/King
Consumer Spend		\$575M	\$698M	.8x
Play Revenue		\$172M	\$209M	.8x
Play Value		\$381M	\$141M	3x
Discovery	Play Controlled New Installs	\$107M	\$54M	2x
	Search New Installs	\$56M	\$16M	3x
	Play Controlled Reinstalls	\$119M	\$26M	5x
	Search Reinstalls	\$65M	\$9M	7x
	Discovery total	\$348M	\$105M	3x
FOP	Credit Card	\$11M	\$14M	.8x
	Paypal	\$2M	\$3M	1x
	Play Card	\$7M	\$2M	3.3x
	DCB	\$11M	\$14M	.8x
	Fop total	\$30M	\$33M	.9x
Delivery	Delivery total	\$2M	\$2M	1.1x

Google

* 2018 data

*King's CPI is \$0.4 while Supercell's is \$1.1

Confidential + Proprietary

- Cpi?

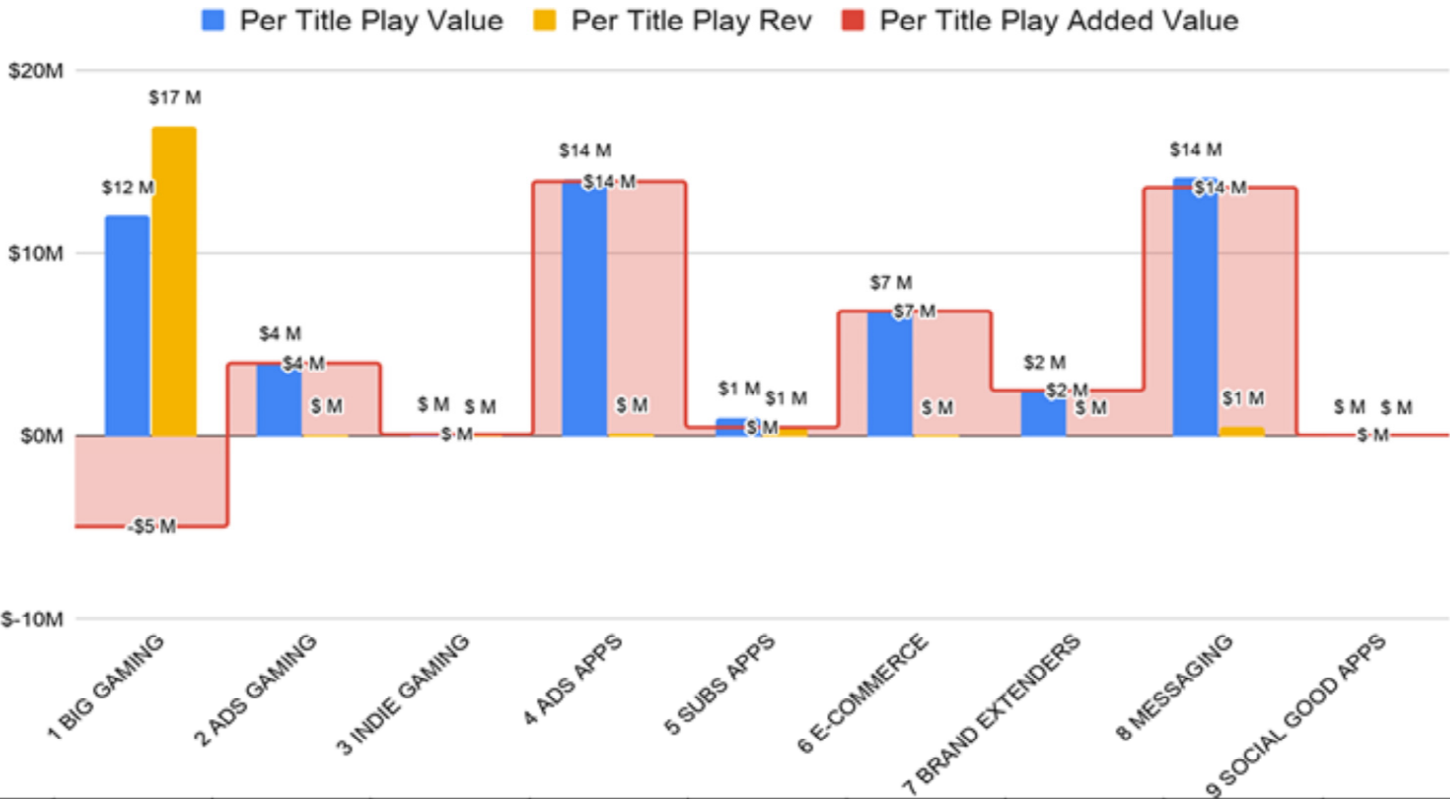
EXHIBIT 360.R-059

3

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Persona Level (sampling of representative apps)

Big Gaming the only negative; titles get a lot of value, but not enough to offset rev share



* 2018H2 data

Google

Number of titles	20	16	17	49	43	40	13	22	75
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ntial + Proprietary

- Bold

3

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Supercell vs NCSoft

Though NCSoft and Supercell have similar consumer spend, play value for NCSoft is much lower due to its very different discovery value

* 2018 data

		NCSoft		Supercell		NCSoft/Supercell
	Consumer Spend	\$776,951,792		\$574,892,255		135%
	Play Revenue	\$233,085,537	30%	\$172,467,677	30%	135%
	Play Value	\$57,147,044	7%	\$380,646,774	66%	15%
Discovery	Play Controlled New Installs	\$815,663	1%	\$107,264,202	28%	1%
	Search New Installs	\$1,021,828	2%	\$55,829,829	15%	2%
	Play Controlled Reinstalls	\$1,348,624	2%	\$119,200,060	31%	1%
	Search Reinstalls	\$1,950,533	3%	\$65,422,907	17%	3%
	Discovery total	\$5,136,647	9%	\$347,716,998	91%	1%
FOP	Credit Card	\$13,547,881	24%	10,603,181	3%	128%
	Paypal	\$6,743	0%	1,847,611	0%	0%
	Play Card	\$10,448,617	18%	6,525,047	2%	160%
	DCB	\$27,968,920	49%	11,467,110	3%	244%
	Fop total	\$51,972,161	91%	30,442,950	8%	171%
Delivery	Delivery total	\$38,235	0%	\$2,486,826	1%	2%

Google

*NCSoft's CPI is \$3.4 while Supercell's is \$1.1

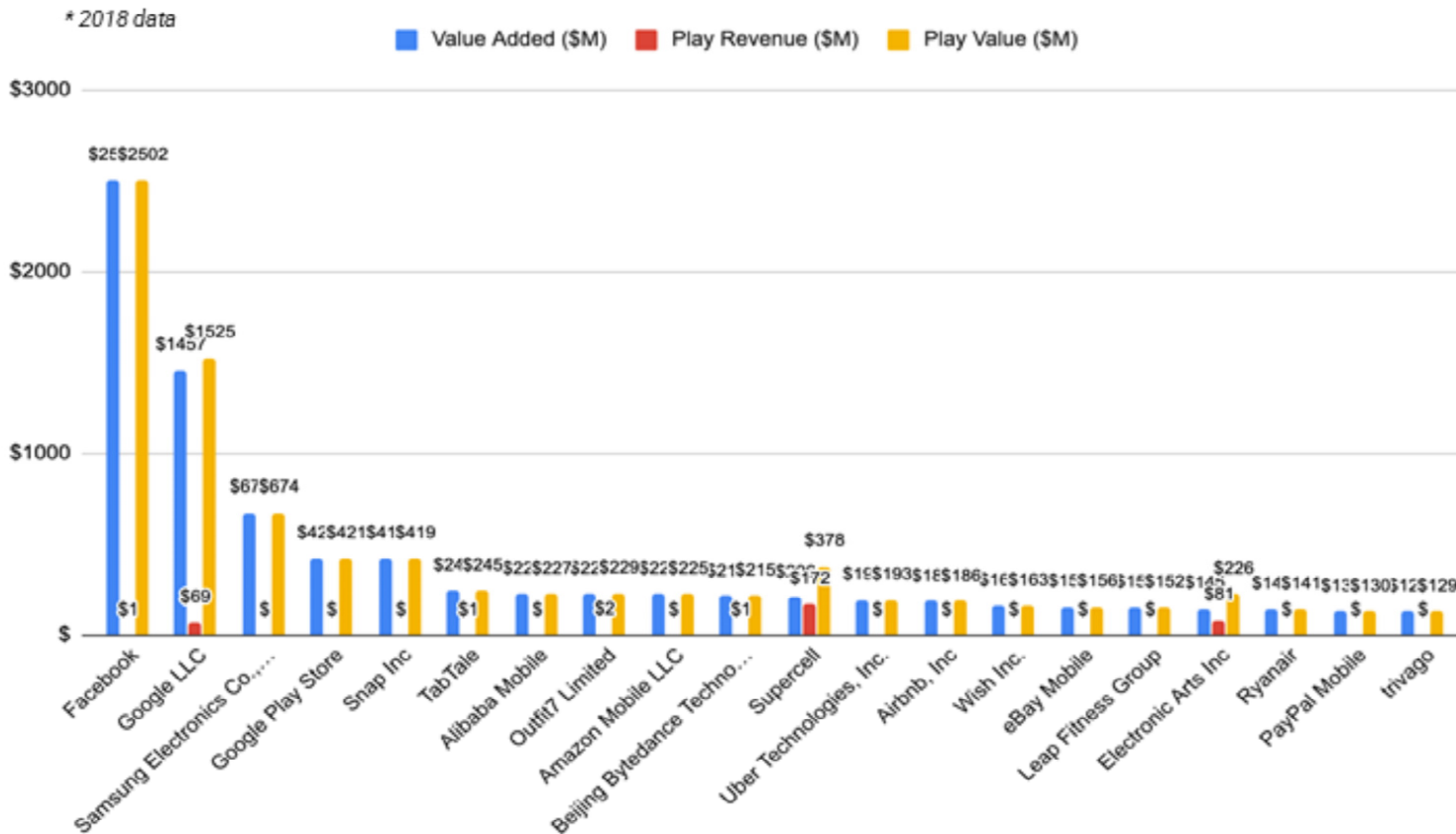
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- Cpi?

EXHIBIT 360.R-061

"Modeled Developer Value" (MDV) is a theoretical vs. precise value, and doesn't include the complete set of resources or investments required to build and maintain the products, or the complete set of products and services provided to devs. They are based on assumptions on the perceived value of Google services to a developer that may not be accurate. They are also built to guide specific decisions and are not appropriate for guiding investments outside of those specific scenarios (e.g., Google level investments, decisions for another product area)

Top 20 Most Value Added Developers



- To do:
- Change slide 6 to have the same format to slide 7

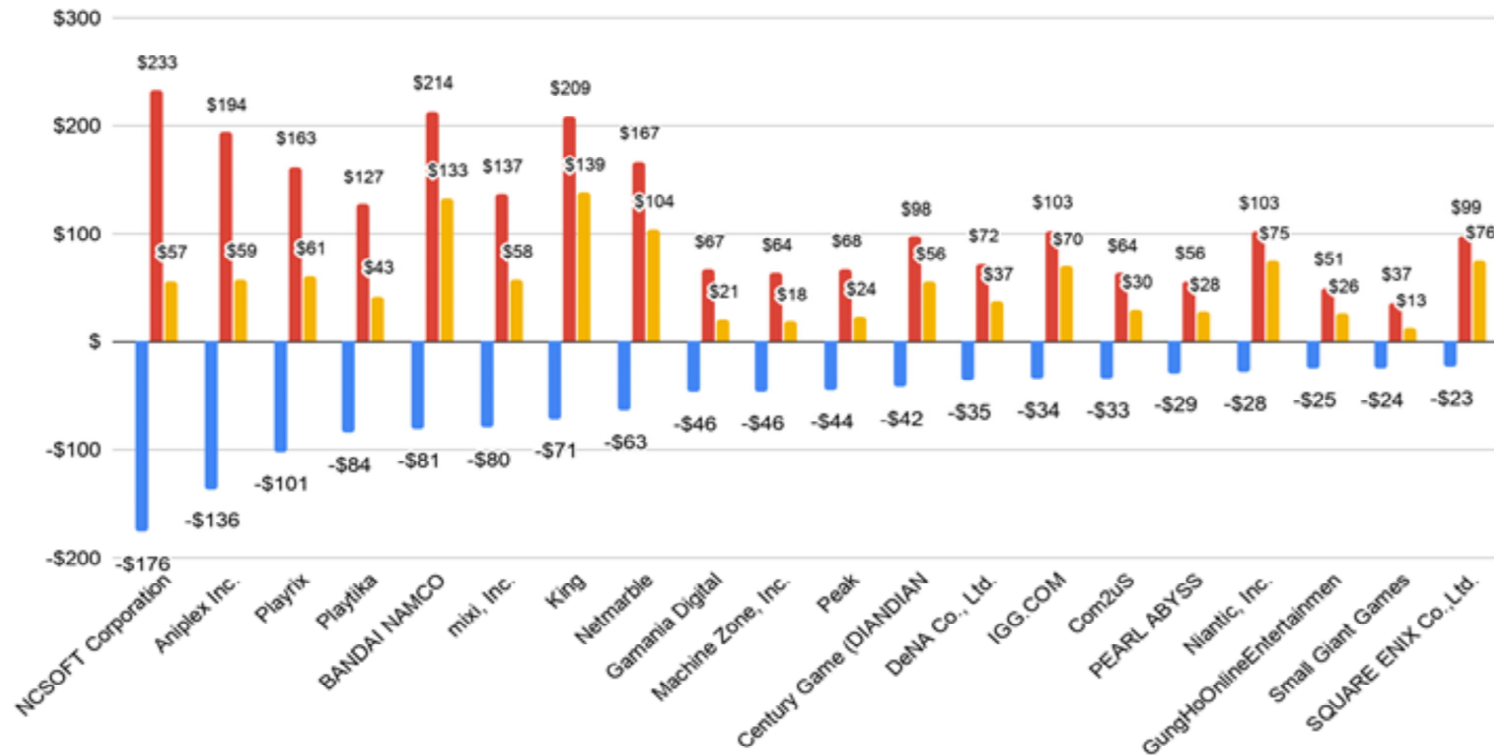
EXHIBIT 360.R-062

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Top 20 Least Value Added Developers

* 2018 data

Value Added (\$M) Play Revenue (\$M) Play Value (\$M)



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- 17/20 are in 'Big Game Developer' persona; 3/20 are in 'Other Monetizing Game Dev' persona

EXHIBIT 360.R-063

Appendix: Key assumptions for this analysis

Play Revenue	
Play Revenue	Consumer Spend * 30%

FOP Value	
FOP Value (=cost to google)	
Credit Card Value	Credit Card Spend * 3%
Paypal Value	Paypal Spend * 3%
DCB Value	DCB Spend * 13%
Gift Card Value	Gift Card Spend * 9.5%

Persona	Average CPI
1 BIG GAME DEV	\$0.65
2 OTHER MONETIZING GAME DEV	\$0.38
3 ADS SUPPORTED GAME DEV	\$0.28
4 SUBS APP DEV	\$0.68
5 OTHER MONETIZING APP DEV	\$0.70
6 ADS SUPPORTED APP DEV	\$0.74
7 ECOMM APP DEV	\$2.62
8 OTHER	\$1.82
TOTAL	\$0.75

Acquisition Value	
Install Value	
New Installs, Play Owned	DM/EM User CPI * #Installs * 100%
New Installs, Cat. Search	DM/EM User CPI * #Installs * 100%
New Installs, Deep Link	0
Reinstalls Value	
Re-Installs, Play Owned	DM/EM User CPI * #Installs * 50%
Re-Installs, Cat. Search	DM/EM User CPI * #Installs * 50%
Re-installs, Deep Link	0

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Google

EXHIBIT 360.R-064

Discovery Value: Install Count

Play drives installs both directly and indirectly to developers

$$\text{Discovery Value} = (\text{Install Count}) * (\text{Install Value})$$

	Play Controlled Installs Smerch, PReX, Related, Topchart	Search Installs
New	Count every new install from Play Controlled sources fully 1 install= 1 count	Discount every new install from Search by 50% 1 install = 0.5 count
Re-Installs	Discount every re-install from Play Controlled sources by 50% 1 install = 0.5 count	Discount every re-install from Search by 25% 1 install = 0.25 count

Google

EXHIBIT 360.R-065

FOP Value: Cost

Play pays the fees on behalf of dev

$$FOP\ Value = (Spend\ by\ FOP) * (Value\ per\ Spend)$$

Conservative Fees	1	2	3	4
	Credit Card	PayPal	Gift Card	DCB
	3%	3%	9.5%	13.5%

Google

EXHIBIT 360.R-066

Appendix - FOP Spend

Spend by each payment method and their share in each persona

* 2018 data

Persona	Credit Card	Paypal	Play Card	DCB	CC Share %	Paypal %	Play Card %	DCB %
1 BIG GAME DEV	\$ 7,042,334,756	\$ 807,028,302	\$ 1,858,467,846	\$ 2,667,926,746	57%	7%	15%	22%
2 OTHER MONETIZING GAME DEV	\$ 3,868,564,694	\$ 425,856,644	\$ 848,741,725	\$ 1,181,297,470	61%	7%	13%	19%
3 ADS SUPPORTED GAME DEV	\$ 226,446	\$ 26,247	\$ 36,193	\$ 147,584	52%	6%	8%	34%
4 SUBS APP DEV	\$ 1,723,739,681	\$ 286,350,130	\$ 188,145,725	\$ 797,160,838	58%	10%	6%	27%
5 OTHER MONETIZING APP DEV	\$ 331,645,746	\$ 45,363,147	\$ 79,289,612	\$ 227,750,483	48%	7%	12%	33%
6 ADS SUPPORTED APP DEV	\$ 839,939	\$ 95,450	\$ 288,811	\$ 508,067	48%	6%	17%	29%
7 ECOMM APP DEV	\$ 44,520	\$ 4,458	\$ 1,362	\$ 11,441	72%	7%	2%	19%
8 OTHER	\$ 3,876,888	\$ 635,069	\$ 751,544	\$ 1,913,908	54%	9%	10%	27%
TOTAL	\$ 12,971,272,670	\$ 1,565,359,449	\$ 2,975,722,818	\$ 4,876,716,537	58%	7%	13%	22%

Google

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EXHIBIT 360.R-067

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GOOG-PLAY-000337630.R

Where are we today with Play Value?

Quantitative Model

(exists)

3 Drivers: Which we believe accounts for majority of quantifiable value

2 approaches: To convert to \$, which provides a range of potential values

Early Learnings

(very early)

Play Level: Understand the size of impact of drivers, over time

Personas: Sampling of devs highlights value of different drivers

Extremes: Snapshots of devs that appear to benefit most/least from Play

Google

EXHIBIT 360.R-068

GOOG-PLAY-000337564.R**Metadata**

Author	Michael Marchak	SEMANTIC
Custodian	Sameer Samat	SEMANTIC
Date Created	2019/08/08 8:55 pm	SEMANTIC
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